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DATE: October 31, 2005

OUR REF: HGM-144-A

YOUR REF: Application S.N. 10/813,610

TO (COMPANY): USPTO Examining Group 3681

ATTN: Examiner Rodney H. Bonck

FROM: Kelly McGlashen

FAX NO. CALLED (571) 272-7089 NO. OF PAGES (Including this page) 7

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MESSAGE: The following is a draft of proposed amendments to the independent claims for discussion purposes only, and not for entry into the application.

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Attorney Docket No. HGM-144-A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Wakabayashi et al.
Serial No.: 10/813,610
Filed: March 30, 2004
Group Art Unit: 3681
Examiner: Bonck, Rodney H.
Title: DRY MULTI-DISC CLUTCH

PROPOSED CLAIM AMENDMENTS
FOR DISCUSSION PURPOSES ONLY DO NOT ENTER

Mail Stop Amendments
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated 20 September 2005, please consider the following proposed claim amendments for the above-identified application.

Claim 1 (currently amended, first version). A dry multi-disc clutch in which a plurality of friction discs are interposed between a drive-side clutch outer member and a driven-side clutch center member, and power is transmitted from the clutch outer member to the clutch center member by pushing the friction discs using a pressure plate, wherein:

 fins that enhance a flow of air are formed on ~~at least one~~ both of the clutch outer member and the pressure plate, and plural passages which allow the communication of air are formed in both the clutch outer member and the pressure plate, such that the clutch

outer member is configured to act as an axial fan, and the pressure plate is configured to act as a centrifugal fan.

Claim 1 (currently amended, second version). In a vehicle comprising an engine, a transmission, and a clutch for selectively detachably connecting the transmission to the engine,

the engine comprising a crankshaft, a drive gear connected to the crankshaft, and a primary gear connected to the drive gear,

the transmission comprising a main shaft, the main shaft lying in parallel to the crankshaft,

the improvement comprising an improved clutch, the clutch comprising a
A dry multi-disc clutch interposed between the primary gear and the main shaft, in which a plurality of friction discs are interposed between a drive-side clutch outer member and a driven-side clutch center member, and power is transmitted from

the crankshaft to the clutch outer member by a connection between the clutch outer member and the primary gear, and from

the clutch outer member to the clutch center member by pushing the friction discs using a pressure plate,

wherein:

fins that enhance a flow of air are formed on at least one of the clutch outer member and the pressure plate and passages which allow the communication of air are formed in the clutch outer member and the pressure plate.

Claim 14 (currently amended, first version). A dry multi-disc clutch comprising:

a drive-side clutch outer member;

a driven-side clutch center member;

a plurality of friction discs interposed between said drive-side clutch outer member and said driven-side clutch center member; and

a pressure plate which pushes the friction discs to transmit power from the clutch outer member to the clutch center member; wherein:

fins that enhance a flow of air are formed on at least one both of the clutch outer member and the pressure plate, and plural passages which allow the communication of air are formed in both the clutch outer member and the pressure plate, such that the clutch outer member is configured to act as an axial fan, and the pressure plate is configured to act as a centrifugal fan.

Claim 14 (currently amended, second version). In a vehicle comprising an engine, a transmission, and a clutch for selectively detachably connecting the transmission to the engine,

the engine comprising a crankshaft, a drive gear connected to the crankshaft, and a primary gear connected to the drive gear,

the transmission comprising a main shaft, the main shaft lying in parallel to the crankshaft,

the improvement comprising an improved A dry multi-disc clutch interposed between the primary gear and the main shaft, the clutch comprising:

a drive-side clutch outer member connected to the primary gear;

a driven-side clutch center member;

a plurality of friction discs interposed between said drive-side clutch outer member and said driven-side clutch center member; and

a pressure plate which pushes the friction discs to transmit power from the clutch outer member to the clutch center member; wherein:

fins that enhance a flow of air are formed on at least one of the clutch outer member and the pressure plate, and passages which allow the communication of air are formed in the clutch outer member and the pressure plate.

Claim 20 (new). A dry multi-disc clutch comprising:

a drive-side clutch outer member;

a driven-side clutch center member;

a plurality of friction discs interposed between said drive-side clutch outer member and said driven-side clutch center member; and

a pressure plate which pushes the friction discs to transmit power from the clutch outer member to the clutch center member; wherein

the clutch outer member is configured to form an axial fan by means of plural elongate outer member openings formed on a radially extending base portion of the clutch outer member, each outer member opening extending radially from a center of the base portion to the periphery of the base portion, the outer member openings arranged side-by-side in the circumferential direction of the clutch outer member so that the portions of the clutch outer member between the outer member openings ^{form} ~~correspond to~~ outer member fins,

the pressure plate comprises an annular body portion and is configured to form a centrifugal fan by means of plural elongate pressure plate fins, each pressure plate fin extending axially outward from a side face of the body portion, each pressure plate fin extending from an inner peripheral edge of the body portion to an outer peripheral edge of the body portion along a curved line such that an outer peripheral end of each fin is circumferentially offset from inner peripheral end of that fin, the spaces between the pressure plate fins ^{form} corresponding to air flow passages.

Claim 21 (new). The vehicle of claim 20, wherein the outer member openings further comprise an inclination relative to the base portion.

Claim 22 (new). The vehicle of claim 20, wherein the clutch further comprises a diaphragm spring disposed on the inner peripheral edge of the body portion, the diaphragm spring biasing the pressure plate toward the clutch outer member.

REMARKS:

These proposed amendments to the claims are submitted for discussion purposes only for use in a telephone discussion of the proposed amendments to take place on Wednesday, November 2, between 8 and 8:30 am.

The applicant notes that Carhart discloses clutch outer member 1 with fins 22 and openings 20 configured to act as a centrifugal fan, and a pressure plate with fins 26 and openings 25 configured to act as an axial fan. In addition, Bullard discloses a clutch

outer member 16, 17 with fins 32 and openings 31, 30 configured to act as both an axial fan and a centrifugal fan, and a pressure plate having no fins or openings formed therein for airflow, but includes a single central opening to accommodate the shaft 4, adaptor bushing 14, and hub 11 therein. Neither reference discloses a clutch outer member configured to act as an axial fan, as well as a pressure plate configured to act as a centrifugal fan.

Moreover, both of these references are directed to a dry clutch associated with flywheels, a configuration commonly associated with automotive applications. This configuration is quite different from the structure disclosed by the applicant in which the clutch is disposed on a transmission shaft which lies parallel to the crank shaft. The second amended version of each of the independent claims 1 and 14 is written in Jepson format so as to claim the disclosed configuration as well as the improved clutch structure.

New claims 20-22 are added which are similar to original claim 14, but add limitations directed to the specific description of the fin and air passage structure of both the clutch outer member and the pressure plate. The claimed structures are fully supported in the specification and particularly in drawing Figures 7, 8 and 9, and are not suggested or disclosed in the cited prior art references.